

What is claimed is:

1. An electrical interconnection comprising:
a flex-circuit having a signal conductor and a shield conductor;
5 a mating surface of the flex-circuit having a signal conductor portion surrounded by a shield conductor portion, the signal conductor portion being electrically coupled to the signal conductor and the shield conductor portion being electrically coupled to the shield conductor.
- 10 2. The electrical interconnection of claim 1 wherein at least a portion of the shield conductor is a metal grid.
3. The electrical interconnection of claim 1 further comprising a second signal conductor portion of the mating surface surrounded by the shield conductor portion.
- 15 4. The electrical interconnection of claim 3 wherein the signal conductor portion and the second signal conductor portion are coupled to differential signal conductors in the flex-circuit.
- 20 5. The electrical interconnection of claim 3 wherein the signal conductor portion is coupled to a first signal conductor of a first waveguide in the flex-circuit and the second signal conductor portion is coupled to a second signal conductor of a second waveguide in the flex circuit.
- 25 6. The electrical interconnection of claim 1 further comprising alignment references in the mating surface of the flex circuit.
7. The electrical interconnection of claim 1 wherein the shield conductor portion of the mating surface is coupled to the shield conductor by at least a semi-circle of
30 conductive vias.
8. The electrical interconnection of claim 1 further comprising:
a second circuit having a second mating surface with a second signal

conductor portion electrically coupled to the signal conductor portion and a second shield conductor portion electrically coupled to the shield conductor portion.

9. The electrical interconnection of claim 8 wherein at least one of the signal
5 conductor portion, second signal conductor portion, shield conductor portion and second shield conductor portion includes conductive particles.

10. The electrical interconnection of claim 8 wherein the second circuit is a
10 second flex-circuit.

11. The electrical interconnection of claim 8 wherein the second circuit is
incorporated in a printed circuit board.

12. The electrical interconnection of claim 8 further comprising
15 first alignment references in the mating surface; and
second alignment references in the second mating surface.

13. The electrical interconnection of claim 8 wherein the second circuit
20 comprises a machined or molded connector connected to a coaxial transmission structure.

14. The electrical interconnection of claim 8 wherein the second circuit is
incorporated in a printed circuit board and wherein the flex-circuit and second circuit
include alignment references, and further comprising:
a housing base;
25 a housing top;
alignment members extending through the alignment references in the flex-
circuit and second circuit, wherein the housing top cooperates with the housing base to
provide a contact force to electrically couple the mating surface of the flex-circuit to the
second mating surface of the second circuit.

15. The electrical interconnection of claim 8 further comprising an interposer
30 disposed between the flex-circuit and the second circuit.

16. The electrical interconnection of claim 15 wherein the interposer comprises a Z-axis conductive material.

5 17. The electrical interconnection of claim 15 wherein the interposer has an interposer body having at least one signal conductor through hole and a plurality of shield conductor through holes surrounding the at least one signal conductor through hole.

10 18. The electrical interconnection of claim 17 further comprising C-springs in each of the plurality of shield conductor through holes and in the signal conductor hole.

19. The electrical interconnection of claim 17 further comprising conductive elastomer in each of the plurality of shield conductor through holes and in the signal conductor hole.

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20. The electrical interconnection of claim 15 wherein the second circuit is incorporated in a printed circuit board and wherein the flex-circuit, interposer, and second circuit include alignment references, and further comprising:

a housing base;

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a housing top;

alignment members extending through the alignment references in the flex-circuit, interposer and second circuit, wherein the housing top cooperates with the housing base to provide a contact force to electrically couple the mating surface of the flex-circuit to the second mating surface of the second circuit through the interposer.

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